

DFT (discrete fourier transform)

Reason:

The digital signal processing is only able to handle with sampled ~~and~~ signals, which ~~have~~ has a finite signal length.

Components of the formular

$$D[k] = \sum_{n=0}^{N-1} d[n] \cdot e^{-j2\pi \frac{k \cdot n}{N}}$$

$D[k] \hat{=}$ Sequence of a periodical spectral area ~~sequence~~
(modulo-N-periodic) $| k \in \mathbb{Z}$ (Integer)

$d[n] \hat{=}$ periodical sequence of a time range
(modulo-N-periodic) $| n \in \mathbb{Z}$ (Integer)

$k \hat{=}$ interval $n = 0, 1, 2, \dots, N-1$

$N \hat{=}$ supporting values (Stützwerte)

$e^{-j\frac{2\pi}{N}}$ $\hat{=}$ rotation factor

→ The DFT could only adapt to periodical and sampled signals